VIII] Maintaining and Preserving Terminals

Washington State Ferries operates 19 terminals and a major maintenance facility on Bainbridge Island. More than half of WSF's terminals are 50 years old. Aging terminals require preservation and improvement investments to ensure the safety, efficiency, and viability of the facilities for landing, loading, and unloading vessels.

detailed and complex maintenance

Maintenance

Just like vessels, terminal structures have a life expectancy. At any point in time a percentage of these parts are within their life cycle. Each part must be replaced periodically to ensure the entire terminal structure operates safely, soundly, and efficiently.

The ferry system's terminals and maintenance facilities consist of hundreds of systems and structures, many of which are designated as vital to the protection of people and the environment. Generally, they are the systems and structures needed to land, unload and load a vessel.

Terminal Maintenance Program

Similar to the vessel maintenance program, terminal maintenance is accomplished in steps. The one primary difference between the terminal maintenance and vessel maintenance programs is that terminals do not have an equivalent to the vessel engine crew, which is available to the vessel 24 hours a day, seven days a week.

The elements of WSF's Terminal Maintenance Program are as follows:

- On-Site Maintenance & Management: The Facilities Manager performs minor adjustments of building and other engineering system components, provides support to on-site vendor services, and reports observed discrepancies or concern regarding the terminal infrastructures for further evaluation and repair.

- Scheduled Preventative Maintenance Program: Personnel from Washington State Ferries Maintenance Facility perform scheduled preventative maintenance work to the terminal infrastructure and various components as assigned by Terminal Engineering.

- Corrective Maintenance Program: Personnel from the Maintenance Facility are responsible for minor to complex corrective work on site. Crews are dispatched from the Maintenance Facility with the necessary tools, equipment and supplies to complete the work. The availability of Maintenance Facility personnel is particularly important when prompt response is required to restore service after breakdown or damage.

- Vendor Services: Certain work is assigned and designated to outside vendors and contractors for routine maintenance. Examples of this work are tasks such as elevator service, automatic door services and fire sprinkler system services.

- Construction Support: During a construction project, personnel from the Maintenance Facility are often tasked with performing certain work to complete the project.

Preservation

WSDOT used $60.9 million of its 2001-2003 Biennium capital spending authority (excluding emergency repairs) to preserve the ferry system's terminals and maintenance facilities. The major investment during the biennium was the reconstruction of the Clinton Terminal trestle and north vessel slip.

Additional investments replaced or refurbished vessel slips at Anacortes, Bainbridge Island, Fauntleroy, Kingston, Southworth and Tahlequah. Overall, the two-year investment program affected 13 terminals and maintenance facilities by replacing or refurbishing 75 terminal systems and structures, including 37 dolphins and wingwalls; 17 towers, bridge seats, transfer spans and aprons; 9 utility systems; five trestle sections; and seven other structures. This effort increased the life cycle rating for vital assets from 70% to 71%. However, the life cycle rating for other assets dropped from 66% to 62%. The results reflect WSF's emphasis on preserving terminal systems and structures that are vital to the protection of people and the environment.

Clinton Phase 2 Terminal Reconstruction

Phase 2 of the Clinton Terminal Reconstruction project was the final phase of an important terminal construction project that started in the 1990's. The Mukilteo/Clinton route is historically the third largest route in the system, carrying over 4 million riders per year.

Preservation spending at this terminal was the largest single terminal investment made during the 2001-2003 Biennium, amounting to $10.8 million. This project replaced and expanded the remaining timber trestle (part of the timber trestle was replaced in Phase 1 during the 99-01 biennium) with a concrete trestle on steel piling. Other work included the reconstruction (and realignment) of Slip 2; replacing the remaining timber bulkhead with a steel sheet pile and concrete bulkhead; and additional architectural upgrades, including a new agent's office and terminal building.

Environmental Concerns

In Phase One of this project, Washington State Ferries worked with marine scientists to ensure appropriate techniques were used during the dock expansion so that the nearby eelgrass population was not damaged. Eelgrass is a habitat for salmon, which can be harmed by prop-wash from boats and restriction of natural light. The final permitted design impacted only 3,444 square feet of eelgrass habitat, a significant reduction from the 10,280 square feet contemplated in the original design.

To minimize the impact of the new dock on the eelgrass beds, WSF installed glass blocks in the passenger walkway to allow light to penetrate through the deck to the eelgrass below, narrowed the trestle and moved the slips further offshore to minimize the effects of propeller wash scour on eelgrass beds, and relocated an existing private fishing pier and float offshore to reduce shading.

Fauntleroy-Southworth Terminal Preservation

In Fall 2002, WSF closed the Fauntleroy and Southworth Ferry Terminals to repair and improve the docks. The projects were scheduled at the same time to minimize impacts to customers. The projects were designed to make much-needed repairs and replace worn out parts at both terminals.

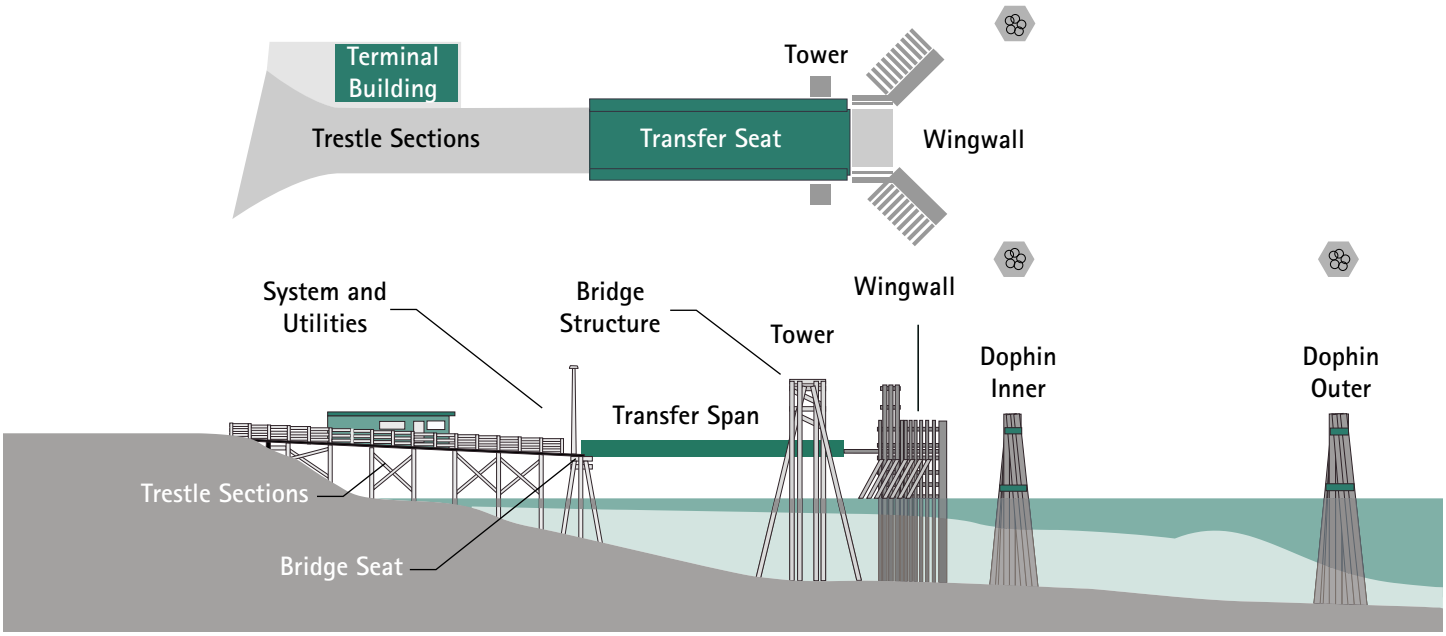
The Southworth and Fauntleroy terminals have been the backbone of the main water link for people and their cars between West Seattle, Vashon Island, and Kitsap County since 1958. It was only a matter of time before everyday wear and tear required WSF to do repairs and replacements.

Preservation spending at the Southworth and Fauntleroy Ferry Terminals amounted to $13.4 million during the 2001-2003 Biennium. At Southworth, preservation investments were made in dolphins, towers, the transfer span, apron, and the foundation. At Fauntleroy preservation investments were made in the wingwalls, transfer span and apron, the north half of the bulkhead or seawall, the south timber trestle and pavement, and the vessel backfeed and cathodic protection systems.

In order to accommodate some of the work, temporary terminal closures were necessary. WSF worked with local transit providers to develop updated bus service and commute options to accommodate customers during the terminal closures. A year prior to construction, the ferry system surveyed customers and asked for their preference regarding possible construction service scenarios. The ferry system took cues from the responses received to formulate a construction plan. With the plan in place, management staged public outreaches on the vessels to inform customers of their options during the construction.

Both the Southworth and Fauntleroy Terminals were closed for three weeks in the fall of 2002. WSF altered its schedule based on discussion with a local watershed group, to protect returning adult salmon in Fauntleroy Creek.

Typical Terminal Structure



Other Terminal Reconstruction and Preservation Projects

Preservation spending at the Anacortes Ferry Terminal amounted to $7.8 million during the biennium. The Slip 2 and Phase 1 Dolphin Replacement project preserved the Auxiliary South Slip 2 towers, bridge seat, transfer span and apron; three dolphins of the Main North Slip 1;three dolphins of the Auxiliary South Slip 2 and the vessel backfeed, backup generator and signage systems.

Preservation spending at the Bainbridge Island Ferry Terminal amounted to $3.4 million during the biennium. The Dolphin Replacement project preserved four dolphins of the Main North Slip, two dolphins of the Center Auxiliary Slip, one dolphin of the Tie-up Slip, and pavement on the timber trestle and the upland holding area.

Preservation spending at the Kingston Ferry Terminal amounted to $3.4 million during the biennium. The Dolphin Replacement Phase 2 project constructed three dolphins, towers, the transfer span and apron at the Auxiliary North Slip 2 and two dolphins at Main Center Slip 2. The Sewer Outfall project compensated Kitsap County for the costs to replace an effluent outfall line damaged during ferry terminal construction activity.

Preservation spending at the Tahlequah Ferry Terminal amounted to $1.5 million during the biennium. The Dolphin Replacement Phase I project preserved two dolphins.

Preservation spending noted above for Anacortes and Bainbridge Island Ferry Terminals plus the Seattle Ferry Terminal included the repair of passenger overhead loading facilities. The work involved modifying the hoist cable system, improving operator visibility, increasing operator control of passenger access, installing emergency lighting, and increasing live load pin monitoring at each terminal.

Emergency Expenditures

When a ferry terminal is damaged, WSF works hard to correct the problem immediately, as it affects the viability of the entire route.

In the 2001-2003 Biennium, Ferry System terminals required expenditures of $4.8 million for emergency repairs. This constituted 72% of all emergency spending. Ten of the 19 terminals operated by WSF required this type of investment. They included the terminals at Anacortes, Bremerton, Clinton, Fauntleroy, Friday Harbor, Keystone, Point Defiance, Seattle, Southworth and Vashon.

Improvement Expenditures

WSF allocated $7.7 million or 10.5% of the funds invested in its terminals for improvements. Improvement projects increase the capacity of a terminal to move riders and vehicles through the facility; provide mobility options, such as access to transit and commuter rail; or generate revenue to support the ferry system. Improvement spending took place at five WSF shore-side facilities. In order of magnitude of investment, these facilities are Clinton, Seattle, Mukilteo, Eagle Harbor, and Bainbridge Island. Other small investments were made system-wide.

Improvement spending at the Clinton Ferry Terminal amounted to $4.3 million. Most of the expenditures were made to expand the trestle in conjunction with the preservation project. Less than $100,000 went to close the prior biennium project to widen the trestle.

Improvement spending at the Seattle Ferry Terminal amounted to $1.9 million. Three-quarters of expenditures were used to complete the Slip 1 Overhead Loading project started prior to the 2001-2003 Biennium. Remaining funds were used for planning future improvements to the terminal, preparing the SR 10—Pier 52 Access Study and designing retail space at the terminal for revenue generation.

Improvement spending at the Mukilteo Ferry Terminal amounted to $1.3 million. These funds were used to plan the relocation of the terminal to a more favorable site and to design a multimodal transportation facility.

Improvement spending at the Eagle Harbor Maintenance Facility amounted to $100,000. The funds were used to prepare a master plan for future development of the facility.

Investment spending at the Bainbridge Island Ferry Terminal consisted of a negligible amount expended to close out the project to widen the lower vehicle holding area that was substantially completed in the prior biennium.

Finally, WSF spent a minor amount for system-wide planning of business initiatives that have the potential of generating revenue for the ferry system.

The table on page 51 summarizes terminal investments in the 2001-2003 Biennium in terms of the three categories: preservation, improvements and emergency repairs.

Environmental Protection

Preservation of terminal structures protects the environment by:

- Reducing the risk of damage to the environment caused by failure of terminal systems and structures;
- Eliminating marine contamination by replacing creosote-treated timber terminal structures with concrete and steel structures;
- Employing environmental mitigation, such as replanting eel-grass; and
- Controlling and removing hazardous materials at terminal and maintenance sites.

Terminal Construction Activities

2001-2003 Biennium Investments and Performance Measures

DOLLARS IN MILLIONS

Terminal Investments	Total	Preservation	Improvements
Anacortes Terminal	$7.8	$7.8	$0.0
Bainbridge Island Terminal	$3.4	$3.4	$0.0
Bremerton Terminal	$0.6	$0.6	$0.0
Clinton Terminal	$15.0	$10.8	$4.3
Eagle Harbor Maintenance Facility	$3.7	$3.6	$0.1
Edmonds Terminal	$0.0	$0.0	$0.0
Fauntleroy Terminal	$5.9	$5.9	$0.0
Friday Harbor Terminal	$1.1	$1.1	$0.0
Keystone Terminal	$0.0	$0.0	$0.0
Kingston Terminal	$3.4	$3.4	$0.0
Lopez Terminal	$0.0	$0.0	$0.0
Mukilteo Terminal	$2.2	$0.9	$1.3
Orcas Terminal	$0.0	$0.0	$0.0
Point Defiance Terminal	$0.0	$0.0	$0.0
Port Townsend Terminal	$1.8	$1.8	$0.0
Seattle Terminal	$3.1	$1.1	$1.9
Shaw Terminal	$1.9	$1.9	$0.0
Southworth Terminal	$7.5	$7.5	$0.0
Tahlequah Terminal	$1.5	$1.5	$0.0
Vashon Terminal	$0.1	$0.1	$0.0
Emergency Repairs	$4.9	$4.9	$0.0
System-wide Terminal Projects	$9.1	$9.1	$0.0
Total Terminal Investments	**$73.1**	**$65.4**	**$7.7**